

## Exploring the use of color photographs in Chinese picture composition writings: An action research in Singapore schools

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**Abstract:** Writing picture compositions is part of the requirements for the mother tongue language learning in Singapore primary schools. For Chinese as a mother tongue, the prevailing materials used for learning picture composition are confined to only black-and-white drawn pictures. This has caused some problems: (1) not many good and suitable black-and-white drawn pictures are available for the teachers to prepare for their lessons; (2) even there is, the processes of preparing for a composition lesson with these pictures is quite time-consuming and (3) black-and-white drawn pictures are not necessarily realistic and interesting enough to motivate pupils. The aim of this study was to experiment the use of color digital photographs in Chinese picture composition lessons. It hoped to achieve two objectives: (1) to investigate the pupils' preferences for the use of color photographs in composition lessons; and (2) to find out if the use of color photographs can help improve pupils' performance. This study followed the action research approach and progressed through three cycles of school testing. At the end of the third cycle of school testing, a survey was administered to 194 pupils; an interview was carried out with 23 pupils; and a debriefing was also conducted with the six subject teachers. In addition, the pupils' marks were collected and analyzed for their performance. The study found that majority of the students preferred the use color photographs in composition lessons, and their marks appeared to support this observation. Only a few pupils were either neutral or not in total agreement. The teachers, on the other hand, believed that using color photographs has the potential of helping them better prepare their composition lessons.

**Keywords:** Action research; Picture composition writing; Color digital photograph

## 探索彩色數碼照片在新加坡小學華文看圖作文中的使用：一個行動研究案例

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**背景：**看圖作文是新加坡小學母語教學的一個重要部分。目前華文看圖作文中所使用的圖片都是黑白的素描圖片。華文教師普遍反映這些素描圖片內容已經過時，印刷質量也較低，看圖作文的準備階段很花時間，寫作的過程也較枯燥無味。學生也經常抱怨黑白素描圖片內容不夠真實，也不太容易激發他們的寫作興趣。本研究嘗試彩色數碼照片在華文看圖作文中的使用效果，希望能夠達到兩個目標：(1) 探究學生對彩色照片在看圖作文中使用的喜愛程度；(2) 驗證彩色照片的使用是否可以提高學生的寫作水平。該研究沿用行動研究方法，共經歷了3個回合的學校試驗。在第三個回合結束時，194名小學生接受了問卷調查，23名學生接受面談，6名教師交流了體會，所有學生的作文分數也被統計分析。結果發現多數學生都喜歡在看圖作文中使用彩色照片，他們的作文分數也都有比較明顯的提高。但是也有少數學生態度比較中立或不太喜歡彩色照片的使用。華文教師相信彩色照片對幫助他們更好地準備作文教學有很大潛力。

**關鍵詞：**行動研究 看圖作文寫作 彩色數碼照片

## INTRODUCTION

Picture composition writing has been part of the requirements for Mother Tongue learning in the primary school education of Singapore over the past two decades. The materials used for picture compositions are mostly black-and-white drawn pictures. They are used to depict activities happened

in schools, families, housing estates or places of interest. Under the current school curriculum for Mother Tongue, pupils start writing a complete sentence once they are in primary schools. Table 1 shows an overview of picture composition writing at each level.

**Table 1: Overview of picture composition writing in primary schools**

Level	No. of pictures used each time	No. of writings per year	No. of helping words provided	Length of writing	Time (mins)
P1/P2	1	5/10		5sentences	30
P3/P4	4	10	10	80words	40
P5/P6	6	10	12	100 words	50

In Primary One (P1), pupils concentrate on learning Hanyu Pinyin (漢語拼音) in the first term of ten weeks. From second term onwards, they start to learn the strokes and meanings of Chinese characters. In the later part of the second term, pupils learn to form a complete sentence by using helping words. In the third term, pupils are given one picture each time and guided by their teacher to form a simple storyline with at least five sentences based on the given picture. This process is called picture writing (看圖寫話). The pupils need to complete five picture writings in P1. In Primary Two (P2), pupils continue with the same practice. The only difference is that they have to complete ten picture writings per year instead. This means that they have to complete about one picture writing per month.

The requirement of picture composition writing begins in Primary Three (P3) and runs through Primary Four (P4). During these two years, pupils are required to complete ten picture compositions per year. A series of four black-and-white drawn pictures with ten helping items is given to pupils for each picture composition. The teacher usually describes the scenario in each picture briefly and explains the meaning of each vocabulary item. The pupils then brainstorm for

ideas, after which, they are required to describe the given scenario in their own words. Occasionally, the teacher may ask pupils to present their ideas to the whole class aloud; the intention is to help them think collaboratively. Pupils are required to complete each picture composition with at least eighty words within a given time frame of forty minutes.

In a similar manner, picture composition writing is also extended to P5 and P6 but with greater demands. Six black-and-white drawn pictures with 12 helping items (refer to Appendix A) are normally given to the pupils to produce a composition writing with at least one hundred words. At this level, pupils are also required to write situational essays in addition to picture compositions. The time given to a pupil to complete a picture composition or a situational essay is fifty minutes. On the whole, a pupil needs to complete ten writing assignments including both picture compositions and situational essays within a curriculum year.

The use of black-and-white drawn pictures for composition writing often receives criticism from the pupils. They complained that the pictures were unhelpful because they were either not clearly drawn or realistically enough to provide them with

sufficient cues to construct meaning (cf. Heinich, Molenda, Russell & Smaldino, 2001). Also, black-and-white drawn pictures may not always appeal to pupils with different learning abilities. For example, high ability pupils may find the pictures not challenging enough to stimulate their thinking; on the other hand, low ability pupils may see these pictures as confusing due to their limited quality. As a consequence, the pupils often become frustrated and lose interest in composition writings.

The layout of the pictures in the teaching materials also limits the teachers the flexibility of conducting their lessons. The current arrangement is to cram four or six pictures on a single page of a book. This makes revealing the details of each picture difficult. If highlighting of a particular picture is needed, very often, the teacher will have to specifically enlarge that particular picture by photocopying. This is both time-consuming and unproductive.

This study, therefore, aims to resolve the above problems. It seeks to leverage the potential of digital color photographs to substitute the black-and-white drawn pictures. Hopefully, the use of digital color photographs in picture composition writing would popularize the art of writing and help pupils improve their writing skills.

For the purpose of this study, the color photographs were taken from school or community activities in which pupils were directly involved. As the pupils were role players in the photographs, it would be much easier for them to narrate the storyline. Appendix B shows the set of color photographs used in this study.

Below are the research questions that this study hoped to answer:

1. To what extent do the pupils like the use of digital color photographs in picture composition writings?
2. Can the use of digital color photographs in picture composition lessons help to improve pupils' performance?

## OVERVIEW OF THE RESEARCH

### Conceptual framework: Masterplan and action research

This research was initiated in the context of implementing the Masterplan in Singapore schools. In 1997, the Masterplan for IT in education was launched as a blueprint for the integration of information technology in education. It provided a strategy to meet the challenges of the 21st century (The MOE, 1997). The initial Masterplan targeted at: (1) enhancing linkages between schools and the world around it; (2) generating innovative processes in education; (3) enhancing creative thinking, lifelong learning and social responsibility; and (4) promoting administrative and management excellence in the education system. Since 2002, Singapore has further elaborated the goals of Masterplan (termed as Masterplan II) to focus on learners, school capacity and leadership, and active IT research in teaching and learning (Hung, 2003; The MOE, 2002).

This study followed the action research approach. In the educational context, action research is often defined as a systematic inquiry conducted by teachers, principals, or other stakeholders in the educational environment to gather information about how their particular schools operate, how they teach and how well their pupils learn (Lee-Hsieh, Kuo, & Tsai, 2004; Mills, 2002). Action research is an attempt to understand educational practices in a more complete way in order to bring about both understanding and improvement of the situation (Carson, Connors, Smits & Ripley, 1989; Groves & Zemel, 2000). An action research study usually involves the following four phases (Hart & Bond, 1995; Kemmis & McTaggart, 1988):

1. Planning. Researchers question 'what are' the realities and 'what should be?' Based on this information, the research team defines the problems and develops a plan for action.
2. Acting. The researchers implement the plan to address the problems.

3. Observing. The researchers observe what is happening and collect data for subsequent reflections and further actions.
4. Reflecting. The researchers reflect upon what happened and why it happened in such a way for further improvement of the action plan.

### Research process

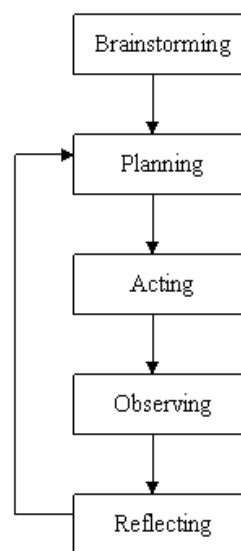
Based on action research paradigm, this study went through three iterative cycles of these four phases. The whole research process is illustrated in Figure 1.

In the brainstorming phase, the situation of picture composition writing, problems, conditions and constraints were identified and the action research approach was decided to follow. After the brainstorming phase, the action research progressed through three cycles of school testing, focusing on the activities of planning, acting, observing and reflecting. The planning activity aimed to make an overall skeleton for that round of school testing, including deciding main activities, assigning duties to team members, and developing a tentative timeline. After this, some picture composition writing lessons were carried out, and comments and suggestion were collected from students and teachers. Reflections were made at the end of each round of school testing for further improvement of the next cycle of school testing. Table 2 shows the major activities of planning, acting, observing and reflection involved in each cycle of school testing.

## THE THIRD CYCLE OF SCHOOL TESTING

### Planning

After the previous two cycles of school testing, it was found that pupils were becoming to like the approach to use color photographs in picture composition writings, and this approach had the potential to increase their performance in writing picture compositions. In the third cycle of school testing, the study intended to compare the performance results of certain groups using color



**Figure 1. The action research model used in this study**

pictures and black-and-white drawn pictures.

Two possible approaches were initiated to conduct this round of school testing. The first was to use the same topic to test these two media. For example, a class would use the normal black-and-white drawn pictures to write a composition. After a few weeks, as for the second lesson, the pupils would write on the same topic, but using color photographs instead. In this case the two performance results done by the same class, with the same title but with two different media can be compared. However, it was later realized that the second lesson would be more like a revision if the same topic was used twice. As a consequence, the marks of the two compositions would not have reflected the actual effect of these two media.

The second approach was to use two different topics to test these two media within a class. In this case, the revision effect existing in the first solution would be removed. However, it might be hard to ensure that these two topics were at the same difficulty level. In the end, it was decided to involve two different classes in the same grade to conduct this round of testing. One class would

**Table 2: Description of each school testing**

	Planning	Acting	Observing	Reflecting
1 <sup>st</sup> testing	Assigned duties -Made a timeline	-Involved three mixed ability classes from two schools -One-hour lessons -Number of students: 100 -Flashed a series of eight color photographs with ten seconds each in PPT -The tutor explained the helping words -Process was similar to that of normal black-and-white picture composition	-The pupils were not receptive to the approach -Majority of pupils looked embarrassed -Failed to motivate them -The students did not perform so better as expected -This approach was less successful	-The pupils were unclear the purpose of using color photographs -They were not mentally prepared for it -They got shocked when they saw more pictures (eight pictures compared to six pictures in normal B/W composition lessons) -They thought more pictures meant more words to write
2 <sup>nd</sup> testing	-Tried again with a different title -Explained clearly the purpose of using color photographs	-The same classes and pupils -Eight color photographs with ten seconds each -Informed pupils of the purpose of using color photographs -Gave clearer instructions: the use of more pictures does not mean more words	-The pupils were more engaged -Administered a survey -The survey results indicated they got to like using color photographs	-The research team members got convinced -Using color photographs had the potential to motivate pupils and increase their performance
3 <sup>rd</sup> testing	-Compare pupils' performance results by using color and black-and-white pictures	-Six classes from two schools were involved -Gave the pupils clear instructions as in the 2 <sup>nd</sup> testing -Each class used color pictures and b/w pictures for two difference topics	-Instruments: questionnaire, interview, debriefing with tutors -Pupils had positive attitude towards the use of color photographs -Better performance results collected from the color picture composition lessons	-Color photographs can be used to supplement B/W drawings -Using color photographs has the potential to reduce teacher workload -Building a digital photograph album is recommended -Do more research on the instructional process

write a composition on one topic by using normal black-and-white drawn pictures and then write another composition on the other topic by using digital color photographs. The process reversed in the second class. If the performance results of using color photographs were consistently better than that of using normal black-and-white drawings in these two classes, then the better performance results must be due to using color photographs and not to using a simpler topic.

### Acting

Ten topics were selected for this cycle of school testing. Thirty digital color photographs were shot for each topic to ensure a better selection of pictures. A total of six mixed-ability classes

comprising two P3 [labeled as 3/1 & 3/2], two P4 [4/1 & 4/2] and two P6 [6/1 & 6/2] from two schools participated in this cycle of school testing. The total number of pupil participants was 194. Six teachers were involved in this study. Each of the six teachers took up one class to conduct picture composition writing.

The assignment of composition topic was such that classes at the same level received the same topic but the topics at different levels were different. For the two classes at each level, one used color photographs while the other used the normal black-and-white drawn pictures. The actual arrangement for the composition lessons is illustrated in Table 3.

**Table 3: The overview of the picture composition lessons**

	3/1	3/2	4/1	4/2	6/1	6/2
First lesson	Topic A		Topic C		Topic E	
	B/W	Color	B/W	Color	B/W	Color
Second lesson	Topic B		Topic D		Topic F	
	Color	B/W	Color	B/W	Color	B/W

### Observing

#### Instruments

A survey questionnaire was designed to collect feedback on how the students felt about using color photographs in their compositions. The survey questionnaire involved three parts. The first two parts allowed pupils to make a comparison between using color photographs and using black-and-white drawn pictures. Part three aimed to find out how pupils felt about the approach to using color photographs and whether this approach benefited them.

After completing the second composition lesson, all the 194 pupils were surveyed. Also, a number of 23 pupils who scored a difference of five marks for lower primary (P3 & P4) and a difference

of ten marks for the upper primary (P5 & P6) were called for interviews. The reasons for choosing the differences of five and ten marks was because the differences would cause a change of grade in lower and upper primary based on the mark range set by the schools.

All the six teachers involved in this research attended a debriefing after completing all compositions. The debrief session aimed to collect the teachers' feedback on using color photographs in picture composition lessons.

### Results

Table 4 shows the pupils' survey results collected from the six classes.

**Table 4: Survey results of pupils' perception**

	Survey Questions	SD* (%)	D (%)	N (%)	A (%)	SA (%)	Mean	S.D
<b>Part I Normal B/W picture composition</b>								
1.1	The picture composition lesson is interesting	26.3	25.8	10.3	27.3	10.3	2.70	1.38
1.2	I clearly understand the task set by my teacher	10.3	32.5	10.8	30.9	15.5	3.09	1.29
1.3	Pictures provided are of good quality	47.9	14.4	12.9	14.4	10.3	2.25	1.43
1.4	Pictures provided are very vivid and true to live	20.1	30.9	16.5	18.6	13.9	2.75	1.34
1.5	Pictures provided are coherent	22.7	33.0	12.4	16.5	15.5	2.69	1.39
1.6	Pictures provided are easy to understand	20.6	33.5	16.0	18.0	11.9	2.67	1.31
1.7	Pictures provided are easy to elaborate	37.6	17.0	14.4	19.6	11.3	2.50	1.44
1.8	Pictures provided inspire me to think deeply	18	34.5	18.0	13.9	15.5	2.74	1.33
1.9	Pictures provided motivate me to write better	27.3	28.4	14.9	14.4	14.9	2.61	1.40
							2.67	1.38
<b>Part II Color photograph composition</b>								
2.1	The picture composition lesson is interesting	10.8	11.9	13.9	37.6	25.8	3.56	1.28
2.2	I clearly understand the task set by my teacher	6.2	3.6	13.4	45.9	30.9	3.92	1.07
2.3	Pictures provided are of good quality	5.7	3.6	13.4	45.4	32.0	3.94	1.05
2.4	Pictures provided are very vivid and true to live	6.7	4.6	11.3	46.4	30.9	3.90	1.10
2.5	Pictures provided are coherent	2.8	2.1	11.3	46.4	30.9	3.81	0.89
2.6	Pictures provided are easy to understand	4.6	2.1	10.3	45.9	37.1	4.09	0.98
2.7	Pictures provided are easy to elaborate	11.9	11.3	13.4	46.9	16.5	3.45	1.23
2.8	Pictures provided inspire me to think deeply	16.5	11.9	11.9	47.9	11.9	3.27	1.29
2.9	Pictures provided motivate me to write better	7.2	7.7	11.3	37.6	36.1	3.88	1.19
							3.78	1.16
<b>Part III General opinions</b>								
3.1	I am more motivated to do my picture composition using color photographs	2.6	1.5	11.3	52.1	32.5	4.10	0.85
3.2	I want more picture compositions to be conducted using color photographs	1.0	1.0	8.8	63.4	25.8	4.12	0.68
3.3	This new approach benefits me in picture composition	3.6	2.6	8.2	55.2	30.4	4.06	0.90
3.4	I learn more writing skill from the new approach	2.6	2.1	7.7	62.4	25.3	4.06	0.80
							4.09	0.81

Notes: \*SD = Strongly disagree; D = Disagree; N = Neutral; A = Agree; SA = Strongly Agree

The overall mean of answers to the 5-point Likert Scale (1= Strongly disagree; 2= Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly agree) questions in Part I was 2.67, which fell between the range of 'disagreed' and 'neutral'. Pupils generally were not in favor of using black-and-white drawn pictures



in composition lessons. One concern was that Q1.2 got the highest mean ( $=3.09$ ) in the survey, which indicated that there were quite a number of pupils who could clearly understand the task set by their teachers.

The overall mean of answers to all questions in Part II was 3.78, which indicated that the pupils were more satisfied with the use of color photographs in composition lessons. The lowest mean in this part was 3.27, which was still slightly higher than that of part one. The highest mean was 4.09, which showed that pupils preferred using photographs in picture compositions. As for Q2.2, the mean score ( $=3.92$ ) was much higher than that of Q1.2. It seemed that in this round of school testing, pupils were much clearer in understanding the task set by their teachers. Q2.6 also indicated that pupils agreed that the color photographs were much easier to understand as compared to the black and white drawn pictures.

The overall mean of the answers to all questions in Part III was 4.09, which was slightly higher than 'agree' and the lowest mean was 4.05 (Q3.4) which also fell under 'agree'. The results showed that majority of the pupils preferred using color photographs.

A total of 23 students who showed a difference of five marks in lower primary or ten marks in upper primary were interviewed. Among the 23 students, twenty performed better in the

color photograph picture composition lessons, and the other three pupils did worse. The pupils who did better mentioned that the events captured in the color photographs were lively and realistic. They could easily come out with ideas for writing the compositions by looking at the color photographs. They thought the way of presenting photographs by using MS PowerPoint also made the lesson interesting and attractive. However, the three pupils who did worse in the color picture compositions mentioned that they were uncomfortable with the use of color photographs in composition lessons. They felt that the interval between each picture in PowerPoint was too fast for them to 'digest' what was happening in the pictures. They hoped the color photographs could be printed out so that they could view the pictures conveniently.

Table 5 showed the means, standard deviations, and effect sizes of pupils' scores in the two compositions. The mark scale for P3 and P4 was twenty and the scale for P6 was forty. Overall, the mean scores of color picture compositions increased tremendously in most classes except that Class 6/2 did not increase obviously. It was probably because the pupils in Class 6/2 already did quite well in the normal black-and-white picture composition. The effect sizes and confidence intervals also confirmed students' improvement in the color digital photograph composition lessons in all classes except 6/2.

**Table 5: Statistical results of pupils' marks**

		3/1 (N*)	3/1 (C*)	3/2 (N)	3/2 (C)	4/1 (N)	4/1 (C)	4/2 (N)	4/2 (C)	6/1 (N)	6/1 (C)	6/2 (N)	6/2 (C)
Mean		11.69	14.00	8.12	10.64	12.54	14.54	11.69	13.81	17.17	24.19	25.70	26.09
S.D		2.166	2.015	3.525	2.620	2.050	2.604	1.655	1.176	5.434	5.121	4.193	5.704
Number of pupils		35		33		39		32		32		23	
Effect size		1.10		0.81		0.85		1.47		1.33		0.08	
Confidence interval for difference	lower	1.31		0.99		0.94		1.40		4.38		-2.58	
	upper	3.31		4.05		3.06		2.84		9.66		3.36	

Note: \*N = Normal B/W picture composition; C = Color digital photograph composition

A teacher's debriefing was conducted at the end of the research. All teachers involved in the action



research attended the debriefing. Most teachers believed that using color photographs to conduct picture composition lessons was a good initiative because it could help pupils generate ideas and form meaningful sentences. Also, using color photographs was flexible for teachers to conduct color picture composition lessons as they could show pictures conveniently.

The issue of whether using color photographs in composition lessons could help teachers prepare composition lessons better and reduce teachers' workload was also discussed. The teachers believed that it would be very time consuming at the beginning as they had to take a number of photographs. However, as more digital color photographs were captured, preparing for a picture composition would become much easier because they could just download the needed photographs from the item bank online.

## DISCUSSION

### *Reflections on the use of color photographs*

This study aimed at investigating the students' preference for the use of color digital photographs in picture compositions lessons, and also the possibility of improving student composition quality by using color photographs. The results showed that majority of students preferred using color photographs in picture composition lessons and they also obtained higher marks than the black-and-white drawn counterparts. However, the better performance may not due completely to the use of color digital photographs because in this study other variables like the way of using (color or black-and-white) pictures, teachers' attitudes towards using the pictures, difficulty of topics, and number of color photographs used were not controlled. Nevertheless, the use of color digital photographs as a different medium still made a great contribution to the better performance of pupils because:

\* Color photographs were more authentic than nor-

mal black-and-white drawings. The color photographs were taken from the events that occurred in schools where pupils had direct involvement in or at least they were familiar with. It was much easier for the pupils to narrate the storyline. Furthermore, authenticity could produce greater engagement with content (Choi & Hannafin, 1995; Newmann, Wehlage, & Lamborn, 1992). Comparatively, the normal black-and-white drawings lacked such advantage.

\* Color photographs involved richer information than normal black-and-white drawings. Because these color photographs were snapshots of real life events, they included every detail happened at that moment. The details would be helpful for pupils to give a more detailed description and meaningful interpretation of the events. Although normal black-and-white drawings could highlight important portions (Heinich, et al., 2001), they were more abstract and also harder for pupils to interpret. To a certain extent, the students had more difficulties in understanding the drawn pictures.

\* Colors could make the visuals more attractive and students attended to them more vigilantly (Baker & Dwyer, 2000; Heinich, et al., 2001). The use of colors has the potential to attract pupils' attention and increase their motivation.

Nevertheless, some pupils were neutral or in slight disagreement with the use of color photographs. One possible reason was that the students such as those who were in P6/2 might have been so used to the normal black-and-white drawn pictures and they felt comfortable with the medium. Therefore they did not see the need to change. Another reason might be that the pupils were not well prepared for the change because the present examination still requires the use black-and-white drawn pictures. These pupils might think that using color photographs to practice composition writing would prohibit them from doing well in the examination and hence were unwilling to change.

### **Conclusions**

This study found that the use of color photographs in picture compositions had little effect on the lowest or highest ability pupils but it produced a significant improvement on performance for the majority of the pupils. Only a minority of pupils who obtained low marks in the normal picture compositions did not demonstrate an obvious increase in performance using the color photograph method. This was mainly because these pupils had deficiencies in language skills and vocabulary to complete sentences and form paragraphs. They probably needed extra support to improve their basic language literacy skill. It was also found that class 6/2 had little substantial progress when using the color photographs for writing composition. One possible reason for this could be that the pupils in this class were already in their best performance as indicated by the high marks obtained with the normal black-and-white pictures. There was little space for them to improve further.

This study also revealed that using color photographs had the potential to help teachers in preparing their picture composition lessons. Although some extra work was necessary when such a method is first used like spending more time on taking and processing photographs, writing sample compositions and preparing these photographs for presentation etc., the teachers will ultimately benefit in a long run when more pictures are gathered and built into a picture library. Teachers can then use the library to prepare their composition lessons with less effort, but more importantly, because these pictures are home-made, they provide greater tendency for usability and sharing.

### **Limitations**

As an action research, this study has limitations in many aspects. Because the teachers were also researchers in this study, their beliefs of and attitudes towards the use of color photographs

in picture compositions inevitably affected the results of the study. Most teacher researchers in this study were interested in using color photographs in picture composition lessons which could translate into prejudicial treatment. In addition, because the marks and the performance of the pupils in this study had to be made known to all the teacher researchers, there could be a tendency to benchmark their classes against each other. This could cause discrepancies in the findings. Perhaps, a better way is to have the compositions blind-marked by the teachers.

### **Future research**

It is recommended that this study will look into the whole instructional process rather than the final product of compositions to reaffirm the positive effect of using the color photographs for composition writing. Also, this study intends to explore other effective ways to promote Chinese composition writing. For instance, rather than showing color photographs to the whole class and writing a composition individually, pupils can be asked to view the photographs through an online platform first and take part in online discussions to brainstorm ideas for the composition.

This study further suggests that establishing an online digital photo library would be helpful for teachers to prepare for picture composition lessons. All color photographs used in this research were stored in a CD-ROM, this implied a limited access to the teachers. To improve on this, an online digital photo repository will be developed so as to facilitate the uploading and downloading of the color photographs. Hopefully, by this, more teachers would come forward to contribute to the development of the digital photo library and share their resources more conveniently and collaboratively.

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Appendix A: A sample of helping words and pictures used in normal B/W picture composition

Appendix B: A sample of color photographs used in a picture composition

## 运动会

### 参考词汇

一年一度 来临 练习 体育中心 举行  
 勉励 锻炼 冠军 打气 奖杯  
 兴高采烈 欢呼

